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ESR study in lightly doped La1-xSrxMnO3

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Abstract

We present a systematic electron-spin-resonance (ESR) study in single crystals of La1-xSrxMnO3(0≤x ≤0.2). The temperature dependence of the ESR linewidth marks all significant transitions between both orthorhombic (O′,O) and the rhombohedral (R) structural phases of the T-x phase diagram. All significant peculiarities of the ESR spectra for low x values within the O′ phase can be attributed to the cooperative Jahn-Teller effect on the Mn3+ eg states and to the influence of the Dzyaloshinsky-Moriya exchange interaction. Possible relaxation mechanisms at higher doping levels are discussed. ©2000 The American Physical Society.